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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,103	02/04/2005	Jean Beguinot	Q83621	9952
23373	7590	08/22/2007		
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER YANG, JIE	
			ART UNIT 1742	PAPER NUMBER
			MAIL DATE 08/22/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/509,103

Applicant(s)

BEGUINOT, JEAN

Examiner

Jie Yang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07/17/2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/17/2007</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

Acknowledge of the receipt of "applicant argument/remarks" filed on 07/17/2007.

New IDS has been send; specification has been amended according office action marked 05/16/2007: in page 1, 2, 5, and 7. Claims 1-11 have been amended from original claims, and claims 1-11 are pending in application.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1-10 is rejected under 35 U.S.C. 35 U.S.C. 103(a) as obvious over Ichikawa et al (JP 8-165542, thereafter 'J542, based on English translation) in view of Jean et al (US 5,714,116, thereafter '116) and Jiro et al (US 5,639,421, thereafter '421).

Regard claims 1-10, 'J542 teaches a steel with excellent weldability and hardenability for plastic molding application (Abstract). The composition comparing between instant claims and 'J542 is listed in following table. 'J542's wt% ranges overlap those recited by the claims 1-8, 10. These overlap encompasses most of range of claimed alloy. The hardness of the steel can up to 460 HB (abstract and table 1). But it does not explicitly state that a, the metal-working parts having a thickness of

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greater than 20 mm, of which the structure is completely martensitic or martensite-bainitic; b, Si less or equal 0.15%wt.

Regard to limitation a, '116 teaches steels for the manufacture of components having high abrasion resistance (abstract). '116 teaches the steel sheet having a thickness of between 10mm to 100mm (Claims 5, 11, and Col. 4, line 33-38). The structure of steel can be adjusted by heat treatments from mixture of martensite and bainite and 5% to 15% of retained carbon-rich austenite (Col.3, Line 55 to 67) to an entirely martensitic structure (Col. 5, Line 14 to 17). '116 has also overlapped composition with instant invention ('116's claims 1-14, tables, and summary of invention), similar hardness range (Tables and claims 8 and 14) and applications (Col. 5, Line 29 to 58). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have chosen suitable thickness and heat treatment processes as '116 to get appropriate massiveness structure and properties for '542's steel.

Regard to limitation b, '421 teaches a precipitation hardening steel excellent in machinability, toughness, hardness after aging treatment and suitable to a metallic mold for plastics (abstract). '421 points out: "Si is added in order to control the hardness at the solution treated state together with

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Mn in a range of 0.15 to 1.00% so as not to damage the ductility and the toughness after aging treatment..." (Col. 4, Line 23 to 29). More specifically note invention examples in '421: table 1 (sample H), Si is 0.14%. The Si composition range disclosed in '421 overlaps with the composition range recited in instant claim and refer to MPEP 2144.05 I, the prima facie obviousness is rendered because compared with instant invention, '421 teaches a low alloy carbon steel with major overlapped in the range of alloy composition (claim 1 and abstract of '421) with similar precipitation hardening--age hardening treatment (Col.1, Line 46 to Col.2, Line 18, and Examples 1 and 2 of '421); and with metallic mold to be used forming of plastics applications (Col.1, Line 6 to 10). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have chosen suitable Si composition, for instance less or equal 0.15%wt. as '421 to get appropriate ductility and toughness combination for 'J542's steel.

Regard to the equations in claim 1-10, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, In re Cooper and Foley 1943 C.D.357, 553 O.G.177; 57 USPQ 117, Taklatwalla v. Marburg. 620 O.G.685, 1949 C.D.77, and In re Pilling, 403 O.G.513, 44 F(2) 878, 1931 C.D.75. In the absence

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of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those ordinary skilled in the art. In re Austin, et al., 149 USPQ 685, 688.

Concluded above discussion, claim 1-10 are rejected by above references.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over 'J542 in view of '116 and '421 as applied claims 1-10 and in further view of Lars-Ake et al (US 6,048,491, thereafter '491).

With regard to claim 11, which depended on claim 1. 'J542, '116 and '421 teaches the limitations of claim 1, But primary reference 'J542 does not explicitly state that at least a portion of the surface is hardened by nitriding and of which the hardness at all points is between 430HB and 530HB. '491 teaches a steel alloy using for manufacturing of plastic moulding tools (Technical field). "The steel after finished hot working and cooling to room temperature obtains a homogeneous structure through whole piece of steel independent of its physical dimension, said structure consisting of a so called low carbon lath martensite..." (Col.1, Line 65 to Col.2, Line 18). '491 teaches the surface hardenability by various surface nitriding techniques: Gas nitriding-510°C; Plasma nitriding--480°C;

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Nitrocarburizing in gas--580°C; and Nitrocarburizing in salt bath (Tenifer)-- 580°C (Col. 6, Line 9 to 45). Instant invention does not disclose details for gaseous nitriding process, however it points out: "Finally, (steel) they are tempered at a temperature higher than 500°C, and preferably of at least 550°C, but lower than AC1." (Page 14, line 10 to 20). Because instant invention's tempered-temperature higher than '491's gas nitriding temperature--510°C, the hardness of the steel will mainly decided by tempered process. Compared with instant invention, '491 has overlapped composition ('491's abstract, Table 1, claims 1-8), similar structure (Col. 1, Line 65 to Col. 2, Line 18) and applications (Technique field, and Background of the invention, Line 10 to 39). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have chosen suitable gaseous nitriding process to improve surface micro-hardness (Col. 6, Line 10 to 45) as taught by '491 to get good surface hardenability and maintain 430 to 530HB body hardness for '542's steel.

***Response to Arguments***

Applicant's arguments, see "applicant arguments/remarks", filed 07/17/2007, with respect to objection to formality issue of claim 11 have been fully considered and are persuasive. The objection of formality issue of claim 11 has been withdrawn.

Applicant's arguments, see "applicant arguments/remarks", filed 07/17/2007, with respect to the rejection(s) of claim(s) 1-8, and 10 under 35 U.S.C. 103(a) as obvious over Ichikawa et al (JP 8-165542, thereafter 'J542, based on English translation) in view of Jean et al (US 5,714,116, thereafter '116) have been fully considered and applicant's arguments regarding newly inserted limitation "Si no more than 0.15 (claims 1-8, 10)" are unconvincing in view of the teachings of newly cited reference: Jiro et al (US 5,639,421, thereafter '421). A new ground(s) of rejection is made as obvious over 'J542 in view of '116 and '421.

Applicant's arguments, see "applicant arguments/remarks", filed 07/17/2007, with respect to the rejection(s) of claim(s) 9 under 35 U.S.C. 103(a) as obvious over 'J542 in view of '116 and '421 have been fully considered but they are not persuasive.

Applicant's arguments, see "applicant arguments/remarks", filed 07/17/2007, with respect to the rejection(s) of claim(s) 11 under 35 U.S.C. 103(a) as obvious over over 'J542 in view of '116 and in further view of Lars-Ake et al (US 6,048,491, thereafter '491) have been fully considered and applicant's arguments regarding newly inserted limitation "Si no more than 0.15 (claims 1-8, 10)" are unconvincing in view of the teachings of newly cited reference: Jiro et al (US 5,639,421, thereafter '421). A new



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ground(s) of rejection is made as obvious over 'J542 in view of '116 and '421 as applied claims 1-10 and in further view of Lars-Ake et al (US 6,048,491, thereafter '491).

Applicant's arguments filed 07/05/2007 :

Applicant's arguments regarding the effects of "Si on thermal conductivity and B on quenchability" are unconvincing because the effects of Si concentration on physical properties, such as hardness, ductility, and toughness are known in the art, and therefore It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimized the concentration of Si for these properties. Applicant's arguments regarding B are unconvincing because they are unsupported by evidence.

Regard applicant's arguments with respect: "the hardness at all points is between 430HB and 530 HB", 'J542's alloy overlaps the range in hardness recited in instant invention, compared with instant invention, the alloy of references have overlapped alloy composition range and similar heat treatment process as discussed, specific properties, such as "hardness" would be inherently obtained (Refer to MPEP 2112.01 [03] I).

Regard applicant's arguments with respect: '116's alloy is for different application. Examiner notes '116 did teach this alloy could be used in "mold" applications (Col.5, Line 29-58).

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Regard applicant's arguments with respect: '491 is incapable of rendering obvious with other references to reject claim 11. The argument has been fully considered but they are not persuasive. As pointed out in rejection for the claim 11, '491 disclosed surface nitriding technique (Col.6, Line 10-45) applying on steel product for manufacturing of plastic moulding tool (Col.1, line 4-9) for changing the surface hardness (Col.6, Line 10-45). The prima facie obviousness is rendered to combine this well know technique with claimed alloy.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-270-1884.


The examiner can normally be reached on M-F, 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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MICHAEL B. CLEVELAND  
SUPERVISORY PATENT EXAMINER